

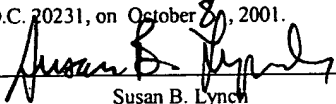


0870 #6
0107

PATENT
Docket No.278012001420

CERTIFICATE OF MAILING BY "FIRST CLASS MAIL"

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Assistant Commissioner for Patents, Washington, D.C. 20231, on October 8, 2001.


Susan B. Lynch

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Carlos F. BARBAS, III, et al.

Serial No.: 09/765,555

Filing Date: January 19, 2001

For: METHODS AND COMPOSITIONS TO
MODULATE EXPRESSION IN
PLANTS

Examiner: Not yet assigned

Group Art Unit: 1638

REQUEST FOR CORRECTION OF DRAWINGS

Assistant Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Enclosed are substitute sheets of drawings for Figure 24 in connection with the above-identified application. In addition, please find enclosed a set of drawings showing the proposed changes in red.

The Figures were amended to include sequence identification numbers which were omitted at the time of filing.

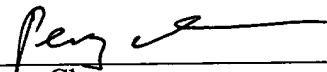
Applicants respectfully request the entry of these amendments.

In the unlikely event that the transmittal letter is separated from this request and the U.S. Patent Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing to our Deposit Account No. 03-1952. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: October 8, 2001

By:



Peng Chen
Registration No. (43,543)

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Suite 500
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Facsimile: (858) 720-5125

Figure 24

(1) Sequence of promoter CsVMV (Example 1A) (SEQ ID NO:1):

Tctagaaactagctccagaaggtaattccaagatgtagcatcaagaatccaatgtttacgggaaaaactatggaa
gtattatgtgagctcagcaagaagcagatcaatatcggcacatatgcaacctatgttcaaaaatgaagaatgtacagatacaag
atcctatactgccagaatacgaagaagaatacgtagaaattgaaaaagaagaaccaggcgaagaaaagaatcttgaagacgta
agcactgacgacaacaatgaaaagaagaagataaggctcgggtgattgtgaaagagacatagaggacacatgaagggtggaaa
tgaagggcggaaagtaaccttatcacaaggaatcttatccccactacttatccttttatattttccgtgtcattttgcccttgagt
ttcctataaaggaaccaagttcggcattgtgaaaacaagaaaaatttggtgaagctattttcttgaagtactgaggatacaact
tcagagaaatttgaagtttga

Total 531 bp

(2) Sequence of zinc finger protein 2C7 binding site (Example 1A) (SEQ ID NO:2):

GCG TGG GCG GCG TGG GCG

Total 18 bp.

(3) Sequence of promoter pc7rbTATA (Example 1A) (SEQ ID NO:3):

Cccgggtatataataagcttggcattccggtactgttgtaaagccacat

Total 51 bp.

(4) Sequence of pND3008 coding region (Example 1B) (SEQ ID NO:4):

agcgtgaccggctcgtgccctctctagagataatgagcattgcatgtctaagttataaaaaattaccacatattttttg
tcacactgtttgaagtgcagtttatctatctttatcacatattttaactttactctacgaataatataatctatagtactacaataatca
gtgttttagagaatcatataaatgaacagttagacatggtctaaaggacaattgagtatttgacaacaggactctacagtttatcttt
ttagtgtgcatgtgttcctttttttgcaaagcttcacctatataaacttcacattttattagtagacatccatttagggttagggt
aatgggtttatagactaatttttagtacatctattttattctatttttagcctctaaattaagaaaactaaaactctatttttagtttttatta
ataatttagatataaaatagaataaaataaagtgactaaaaaataaacaataaccctttaagaaataaaaaactaaggaaacattt
tcttgtttcgagtagataatgccagcctgttaaaccgctgcgacgagctaacggacaccaaccagcgaaccagcagcgtcgcg
tcgggccaagcgaagcagacggcacggcatctctgtcgtgcctctggaccctctcgagagttccgctccaccgttggaactg
ctccgctgtcggcatccagaaattgcgtggcggagcggcagacgtgagccggcacggcagggcgctcctcctcctcctcag
gcacggcagctacggggattcctttccaccgctccttcgctttccttcctcgcccgccgtaataaataagacacccctccaca

ccctctttccccaacctcgtgttggaggcgcacacacacacacacacagatctcccccacacccgctcgacacccgctt
 caagggtacgccgctcgtctccccccccccccctctctaccttctctagatcggcgttccggtccatggttagggcccggttagtgc
 tacttctgttcatgtttgtgttagatccgtgtttgtgttagatccgtgctgctagcgttctgtacacggatgcgacctgtacgtcagacac
 gttctgattgctaacttgccagtgtttctttggggaatcctgggatggctctagccgttccgcagacgggatcgatttcatgattttt
 tttgtttcgttgcatagggttgggttgccttttcttttcaatataatgccgtgcactgtttgtcgggtcalcttttcatgcttttttgt
 ctgtgtgtgatgatgtggtctggttggcggtcgttctagatcggagtagaattctgttcaaactacctggtggatttattaattttg
 atctgtatgtgtgtccatacatattcatagttacgaattgaagatgatggatggaaatcgcacataggtataggtatacatgttgatg
 cgggttttactgatgcataacagagatgcttttgttcgcttgggtgtgatgatgtggtgtggttggcggtcgttcattcgttctagat
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 agtttgccaggagtgatgaacgcaagaggcataccaaaatccatttaagacagaaggactctagaactagtggccaggccggc
 caggctagcccgaaaaaagaacgcaaagttggcgcgccgacgcgtggacgatttcgatctcgacatgctgggttctgatgc
 cctcgtgactttgacctggatgtgtgggaagcgacgcattggatgactttgatctggacatgctcggctccgatgctctggacg
 atttcgatctcgatatgttaattaactacccgtacgacgttccggactacgcttcttgagaattcgcggccgcccggccgagccctag
 ggaggagctcaagatccccgaatttccccgatcgttcaaacatttggaataaagtttcttaagattgaatcctgttgcgggtcttg
 cgatgattatcatctaatttctgttgaattacgttaagcatgtaataaataacatgtaatgcacgttattatgagatgggttttatga
 ttagagtcgccgaattatacatttaatcgcgatagaaaacaaaatatagcgcgcaaaactaggataaattatcgcgcgcgggtgtca
 tctatgttactagatccgggaattgggtac

Total:	3120 bp
ZmUbi promoter:	44 bp to 2026 bp
Six finger ZFP2C7:	2060 bp to 2588 bp
Nuclear localization signal:	2620 bp to 2641 bp
VP64 activation domain:	2641 bp to 2805 bp

HA eptitope tag:	2805 bp to 2836 bp
Nos terminator:	2884 bp to 3164 bp

(5) Sequence of pND3018 coding region (Example 1B) (SEQ ID NO:5):

[illegible]

cgcaagaggcatacaaaatccataccgggtgagaagccctatgcttgcctgtcgagtcctgcgatcgccgcttttctaagtcgg
ctgatctgaagcgccatccgcacacacaggccagaagcccttcagtgatgaatgcgcgtaacttcagtcgtagtga
ccaccttaccacccacatccgcacccacacaggcgagaagccctttgcctgtgacattgtgggaggaagttgccaggagtgat
gaacgcaagaggcatacaaaatccatttaagacagaaggactctagaactagtgccaggccggccagtaccggtacgacg
ttccggactacgcttctgaaagcttggtaccgagctcggatccccgaatttccccgatcgttcaaactttggcaataaagtttctt
aagattgaatcctgttgccggtcttgcgatgattatcatctaatttctgtgaattacgttaagcatgtaataataacatgtaatgcatg
acgttattatgagatgggttttatgattagagtgccgcaattatacatttaatacgcgatagaaaacaaatatagcgcgcaaacta
ggataaattatcgcgcggtgtcatctatgttactagatccgggaattccggaccggtaccagcggcc

Total:	3068 bp
ZmUbi promoter:	44 bp to 2026 bp
SID repression domain:	2066 bp to 2173 bp
Nuclear localization signal:	2174 bp to 2194 bp
Six finger ZFP2C7:	2207 bp to 2735 bp
HA epitope tag:	2762 bp to 2791 bp
Nos terminator:	2820 bp to 3112 bp

(6) Sequence of 6X2C7 binding site (SEQ ID NO:6):

Cgtgctagcgcgtggcgccgctgggcgaacaagcgtggcgccgctgggcgaacaagcgtggcgccgctgggc
gactagtgtagcgcgtggcgccgctgggcgaacaagcgtggcgccgctgggcgaacaagcgtggcgccgctgggcgac
tagtg

Total: 155 bp

(7) Sequence of 3 finger protein C7: (SEQ ID NO:73)

Atggcccaggcgccctcgagccctatgcttgcctgtcgagtcctgcgatcgccgcttttctaagtcggctgatctg
aagcgccatccgcacacacaggccagaagcccttcagtgatgaatgcgcgtaacttcagtcgtagtgaccacctta
ccaccacatccgcacccacacaggcgagaagccctttgcctgtgacattgtgggaggaagttgccaggagtgatgaacgca
agaggcatacaaaatccatttaagacagaaggactctagaactagtgccaggccggccaggctagc

Total: 314 bp

(8) Amino acid sequence of 3 finger protein C7: (SEQ ID NO:74)

Maqaalepyacpvescdrrfsksadlkrhrihtgqkpfqcrimmmfsrsdhlththrtgkpfacdicgrkfar
sderkrhtkihlrqkdsrtsgagqas

Total: 105 aa

(9) Sequence of zinc finger protein ZFPap3 binding site:

GAT GGA GTT GAA GAA GTA (SEQ ID NO:7)

Total: 18 bp

(10) Sequence of zinc finger protein ZFPm1 and ZFPm2 binding site m12:

GCC TCC TTC CTC CTC TCA CTC (SEQ ID NO:8)

Total: 21 bp

ZFPm1 binding site: compliment strand of 1 to 18

ZFPm2 binding site: compliment strand of 4 to 21

(11) Sequence of zinc finger protein ZFPm3 and ZFPm4 binding site m34:

GCC AAC TAC TAC GGC TCC CTC ACC (SEQ ID NO:11)

Total: 21 bp

ZFPm3 binding site: compliment strand of 1 to 18

ZFPm4 binding site: compliment strand of 7 to 24

(12) Partial sequence of pMal-m1 (1-3300 bp) and zinc finger protein ZFPm1

(2719-3270 bp) (SEQ ID NO:14):

ccgacaccatcgaatggtgcaaaaccttcgcggtatggcatgatatagcgccggaagagagtcattcagggtggt
gaatgtgaaaccagtaacgttatacatgatgtcgagagtatgccggtgtcttcatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcggggcaaacatcgttgcgtgattggcgttgcacacctccagctggccctgcacgcgccgtcgcaattgtcgcggcgat
taaatctcgccgatcaactgggtgccagcgtggtggtgctgatgtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaatcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttcggcggtatttcttgatgtctctgaccagacccatcaacagtatttttctccatgaagacgggtacgcga
ctggcggtggagcatctggctgcattgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgcgtctgc
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ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggctgaaatcaccccg
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tatcggttcaagatgaaaacggcaagtacgacattaaagacgtgggcgtggataacgctggcgcgaaagcgggtctgaccttc
ctggttgacctgattaaaaacacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgaccatcaacggcccgtgggcatgtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca
agggtaaccatccaaaccgttctgttggcgtgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga
gttctctgaaaactatctgctgactgatgaaggcttggaaagcgggttaataaagacaaaccgctgggtgccgtagcgctgaagtct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacggccagaaaggtgaaatcatgccgaacatcc
cgcatgtccgcttctgtgtatgccgtgcgtactgcggtgatcaacgccgccagcggctcgtcagactgtcgatgaagccctga
aagacgcgcagactaatcagctcgaacaacaacaataacaataacaacacctgggatcgagggaaggatttcagaa
ttcgatcctcttctctgttgcccaggcggccctcgagccggggagaagccctatgcttgcggaatgtggtgaagtccttctc
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cggctgacaatctcgtccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacgacgt
tccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm1: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm1: 2740 bp to 2790 bp

Primer F2-f of ZFPm1: 2867 bp to 2940 bp

Primer F2-b of ZFPm1: 2824 bp to 2889 bp

Primer F3-b1 ZFPm1: 2916 bp to 2973 bp

Primer F3-b2 ZFPm1: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm1: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm1: 2992 bp to 3042 bp

Primer F5-f of ZFPm1: 3119 bp to 3192 bp

Primer F5-b of ZFPm1: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm1: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm1: 3205 bp to 3273 bp

(13) Sequence of zinc finger protein ZFPm1

(Translated from pMal-m1: 2719-3270 bp): (SEQ ID NO:75)

Aqaalepgekyacpecgksfsdpghlvhrhqrhtgekpykpecgksfsqrahlerhqrhtgekpykpec
gksfsqssnlvrhqrhtgekpyacpecgksfsrsdnlvrhqrhtgekpykpecgksfsrsdnlvrhqrhtgekpykpe
cgksfsqaghlashqrhtgkktsgqag

(14) Partial sequence of pMal-m2 (1-3300 bp) and zinc finger protein ZFPm2

(2719-3270 bp) (SEQ ID NO:15):

ccgacaccatcgaatggtgcaaaaccttcgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt
gaatgtgaaaccagtaacgttatagatgtcgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattcccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgatggcgttgccacctcagctggccctgcacgcgccgtcgcaaattgtcgcggcgat
taaattctcgccgatcaactgggtgccagcgtggtgtcgtatgtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaattctctcgcgaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcgttatttctgatgtcttgaccagaccccatcaacagtatttttctccatgaagacggtagcga
ctgggcgtggagcatctgtgcattgggtcaccagcaaatcgcgctgttagcgggcccattaagttctgtctcggcgcgtctgc

gtctggctggctggcataaatactcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtgccatgtccg
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ggccaggcgggtgaagggaatcagctgttcccgtctcactggtgaaaaaaaaaccacctggcgcccaatacgcaaaccg
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aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacggtgcaccaatgcttctggcgt
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gtggaattgtgagcggataacaatttcacacaggaaacagccagtcggttaggtgttttcacgagcacttcaccaacaaggacc
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ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggtacgctcaatctggcctgttggctgaaatccccgg
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt
gaagcgttatcgctgatttatacaaaagatctgctgccgaaccgccaaaaacctgggaagagatcccggcgtggataaagaa
ctgaaagcgaaaggtaagagcgcgtgatgtcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
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ctggttgacctgattaaaaacaacacatgaatcgacacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgaccttca
agggtcaaccatccaaaccgttctgtggcgtgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga
gttctctgaaaactatctgctgactgatgaaggcttggaagcggtaataaagacaaaccgctgggtgccgtagcgtgaagctt
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaagggtgaaatcatgccgaacatcc
cgcagatgtccgcttctgtgtatgccgtgactgcggtgatcaacgccgccagcggctcgtcagactgtcgtatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctgggatcgagggaaggatttcagaa
ttcggtacctcttctctgtggcccaggcggccctcgagcccgaggagaagccctatgcttgcgggaatgtggttaagctcttctc
tcagagctctcacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag
ccagtccagcaacctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct
cggcttgacaatctcgtccggcaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtggttaagctcttcagcc
gcagcgataacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttagc
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cggtctgacaatctcgtccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtacccgtacgacgt
tccggactacgct

Total: 514 bp

Primer F1-f1 of ZFPm2: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m2: 2740 bp to 2790 bp

Primer F2-f of ZFP m2: 2867 bp to 2940 bp

Primer F2-b of ZFPm2: 2824 bp to 2889 bp

Primer F3-b1 ZFPm2: 2916 bp to 2973 bp

Primer F3-b2 ZFPm2: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm2: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm2: 2992 bp to 3042 bp

Primer F5-f of ZFPm2: 3119 bp to 3192 bp

Primer F5-b of ZFPm2: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm2: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm2: 3205 bp to 3273 bp

(15) Partial sequence of pMal-m3 (1-3300 bp) and zinc finger protein ZFPm3

(2719-3270 bp) (SEQ ID NO:16):

ccgacaccatcgaatggtgcaaaaccttcgcggatggcatgatagcgcccgaagagagtcattcagggtggt
gaatgtgaaccagtaacgtttatcagatgtcgcagagtatgccggtgtctcttatcagaccgtttcccgctggtgaaccaggcca
gccacgtttctcgaaaacgcgggaaaaagtggaagcggcgatggcggagctgaattacattcccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgattggcgttgccacctccagctctggccctgcacgcgccgtcgcaaattgtcgcggcgat
taaattcgcgccgatcaactgggtgccagcgtggtggtgctgatggtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaattctctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
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gtttcaacaacacatgcaaatgctgaatgagggcatcgttcccactcgcgatgctggttccaacgatcagatggcgtggggcg
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gttatatcccgccgtaaccacatcaaacaggatttgcctgctggggcaaacagcgtggaccgcttgctgcaactctctcag

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cctctccccgcgcgttgccgattcattaatgcagctggcagcagaggttcccactggaaagcgggcagtgagcgcaacgc
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acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgcatcgtgtt
gaagcgttatcgtgtattataacaagatctgctgccgaacccgccaaaaacctgggaagagatcccgcgctggataaagaa
ctgaaagcgaaggttaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
tatgcgttcaagtatgaaaacggcaagtagacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgacctc
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgcagaagctgcctttaataaaggcgaaacag
cgatgaccatcaacggcccggtggcgatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca
agggtcaaccatccaaaccgttcgttggcgtgctgagcgcaggtattaacgcccgccagtcggaacaaagagctggcaaaaga
gttcctcgaaaactatctgctgactgatgaaggctctggaagcgggtaataaagacaaaaccgctgggtgccgtagcgtgaagtct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc
cgcagatgtccgcttctggtatgccgtgctactgcgggtgatcaacgccgccagcggtcgtcagactgtcgtatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgaagggaaggatttcagaa
ttcgatcctcttctctgtggcccaggcggccctcgagcccggggagaagccctatgcttgcgggaatgtgtaagtccttca
gcgatcctggccacctggttcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttta
gcaccagcggctccctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtccttca
gccagagctccagcctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtgtaagtccttca
gccagagcagctccctggtgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agtactgccgcgacctgtcgtccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtccttct
cccaatccagccatctcgtccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtacccgtacgac
gttccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm3: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m3: 2740 bp to 2790 bp

Primer F2-f of ZFP m3: 2867 bp to 2940 bp

Primer F2-b of ZFPm3: 2824 bp to 2889 bp

Primer F3-b1 ZFPm3: 2916 bp to 2973 bp

Primer F3-b2 ZFPm3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm3: 2992 bp to 3042 bp

Primer F5-f of ZFPm3: 3119 bp to 3192 bp

Primer F5-b of ZFPm3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm3: 3205 bp to 3273 bp

(16) Partial sequence of pMal-m4 (1-3300 bp) and zinc finger protein ZFPm4

(2719-3270 bp) (SEQ ID NO:17):

ccgacaccatcgaatgggtgcaaaccttctcgcggtatggcatgatagcgcccgaagagagtaattcagggtggt
gaatgtgaaaccagtaacgttatacgtatgctgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtggaaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcggggcaaacagtcgttgattggcgttgcacacctcagctcggccctgcacgcgccgtcgcaaattgtcgcggcgat
taaatctcgcgccgatcaactgggtgccagcgtgggtgtcgatggtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaatcttctcgcgaacgcgtcagtggtgatcattaactccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcgttatttctgatgtctctgaccagacacccatcaacagtatttttctcccatgaagacggtacgcga
ctgggcgtggagcatctggtcgcattgggtcaccagcaaatcgcgtgttagcgggccattaagtctgtctcggcgcgtctgc
gtctggctggctggcataaatatctcactcgaatcaaattcagccgatagcgggaacgggaaggcgactggagtgccatgtccg
gttttaacaaaccatgcaaatgctgaatgagggcatcgttccactgcgatgctggttgccaacgatcagatggcgtgggcgc
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat
gttatatcccgccgttaaccaccatcaaacaggatttgcctgctggggcaaaccagcgtggaccgcttgctgcaactctctcag
ggccaggcgggtgaagggaatcagctgttggcgtctcactgggtgaaaagaaaaaccacctggcgcccaatacgcaaacgg
cctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccgactggaaagcgggcagtgagcgaacgc
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcgaaggcgactcccgttct
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggctcgataatgt

gtggaattgtgagcggataacaatttcacacaggaaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc
 atagattatgaaaactgaagaaggtaaactggtaatctggattaacggcgataaaggctataacggctcgcgtgaagtcggttaag
 aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattcccacaggttcgggcaact
 ggcatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggtgaaatcaccgagg
 acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacacggcaagctgattgcttaccgatcgtgtt
 gaagcgttatcgtgattataacaaagatctgctgccgaacccgccaaaaacctgggaagagatccggcgctggataaagaa
 ctgaaagcgaaaggtaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
 tatgcttcaagtatgaaaacggcaagtacgacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgaccttc
 ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
 cgatgacctcaacggcccggtggcatggtccaacatcgacaccagcaaatgaattatggtgaacggtactgccgacctca
 aggggtcaacctcaaacccgttcgttggcgctgctgagcgcaggtattaacgccgccagtcgaacaaagagctggcaaaaga
 gttctcgaaaactatctgctgactgatgaaggctctggaagcggtaataaagacaaaccgtgggtgccgtagcgtgaagctt
 tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaagtgaaatcatccgaacatcc
 cgcagatgtccgcttctggtatgccgtgcgtactcggtgatcaacgccgccagcggtcgtcagactgtcgtatgaagccctga
 aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgaagggaaggatttcagaa
 ttccgatccttctctgtggccaggcggccctcgagccggggagaagccctatgcttgcgggaatgtgtaagtccttca
 gccagagcagctccctggtgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
 agccagagcagcagcctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtcttctc
 agtgattgtcgtgatcttgcgaggcaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtgtaagtccttctc
 tcagagctctcacctggtgcgccaccagcgtacccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag
 ccgcagcgataacctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtcttctca
 acttcaggccatttggctccgtcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacgacgtt
 ccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm4: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm4: 2740 bp to 2790 bp

Primer F2-f of ZFPm4: 2867 bp to 2940 bp

Primer F2-b of ZFPm4: 2824 bp to 2889 bp

Primer F3-b1 ZFPm4: 2916 bp to 2973 bp

Primer F3-b2 ZFPm4: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm4: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm4: 2992 bp to 3042 bp

Primer F5-f of ZFPm4: 3119 bp to 3192 bp

Primer F5-b of ZFPm4: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm4: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm4: 3205 bp to 3273 bp

(17) Partial sequence of pMal-Ap3 (1-3300 bp) and zinc finger protein ZFPAp3

(2719-3270 bp) (SEQ ID NO:18):

ccgacaccatcgaatggtgcaaacctttcgcggtatggcatgatagcgcccggaagagagtcaattcagggtggt
gaatgtgaaaccagtaacgttatcatgatgctgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtggaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcggggcaaacagtcgttgctgattggcgttgccacctccagtctggccctgcacgcgccgtcgcaaattgtcgcggcgat
taaatctcgcgccgatcaactgggtgccagcgtggtggtgctgatggtagaacgaagcggcgctgaagcctgtaaagcggcg
gtgcacaatcttctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcgttatttcttgatgtctctgaccagacacctcaacagtatttttctccatgaagacggtacgcga
ctgggcgtggagcatctggtcgcattgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgcgtctgc
gtctggctggctggcataaatatctcactcgcaatcaaatcagccgatagcgggaacgggaaggcgactggagtgccatgtccg
gtttcaacaacatgcaaatgctgaatgagggcatcgttccactgcgatgctggttgccaacgatcagatggcgtgggcgc
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gttatatcccgccgttaaccaccatcaaacaggatttgcctgctggggcaaacagcgtggaccgcttgctgcaactctctcag
ggccaggcgggtgaagggaatcagctgttggccgtctcactggtgaaaagaaaaccacctggcgcccaatacgcaaacg
cctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccactggaaagcgggcagtgagcgcaacgc
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcactgcacggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcaaggcgactcccgttct
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggctcgataatgt
gtggaattgtgagcggataacaattcacacaggaaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc
atagattatgaaaactgaagaaggtaaactgtaatctggattaacggcgataaaggctataacggtctcgtgaagtcggttaag
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattcccacaggttgcggcaact
ggcgtatggccctgacattatcttctgggcacacgaccgtttggtggctacgctcaatctggcctgttggtgaaatcaccggg
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacacggcaagctgattgcttaccgatcgtgtt

gaagcgttatcgctgattataacaagatctgctgccgaacccgccaaaaacctgggaagagatcccgccgctggataaagaa
ctgaaagcgaaaggtaagagcgcgctgatgttcaacctgcaagaacctgacttcacctggccgctgattgctgctgacgggggt
tatgcgttcaagtatgaaaacggcaagtacgacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgaccttc
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgacctcaacggcccgtgggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca
agggtcaacctcaaacccgttcgtggcgctgagcgcaggtattaacgcccgccagtccgaacaaagagctggcaaaaga
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aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacaacctcgggatcgagggaaggatttcagaa
ttcggatcctcttctctgtggcccaggcggccctcgagcccggggagaagccctatgcttgtccggaatgtggttaagtccttca
gccagagcagctccctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agccagtcagcaacctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttc
agccagtcagcaacctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgtccggaatgtggttaagtccttc
agcaccagtggctccttggttagacaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agccagcgcgccacactggaacgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtcttt
ctcaacttcaggcaacttggtccgtcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtacctgtacga
cgttcgggactacgt

Total: 514 bp

Primer F1-f1 of ZFPAp3: 2770 bp to 2850 bp

Primer F1-f2 of ZFPAp3: 2740 bp to 2790 bp

Primer F2-f of ZFPAp3: 2867 bp to 2940 bp

Primer F2-b of ZFPAp3: 2824 bp to 2889 bp

Primer F3-b1 ZFPAp3: 2916 bp to 2973 bp

Primer F3-b2 ZFPAp3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPAp3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPAp3: 2992 bp to 3042 bp

Primer F5-f of ZFPAp3: 3119 bp to 3192 bp

Primer F5-b of ZFPAp3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPAp3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPAp3: 3205 bp to 3273 bp

(18) Sequence of oligo m12 (SEQ ID NO:19):

Biotin-GGa gcc tcc ttc ctc ctc tca ctc GGG TTTT CCC gag tga gag gag gaa gga
ggc tCC

Total: 58 bp

Lower case sequence: ZFPm1 and ZFPm2 binding site m12

(19) Sequence of oligo m34 (SEQ ID NO:20):

Biotin-GGa gcc aac tac tac ggc tcc ctc acc GGG TTTT CCC ggt gag gga gcc gta
gta gtt ggc tCC

Total: 58 bp

Lower case sequence: ZFPm3 and ZFPm4 binding site m34

(20) Sequence of oligo Ap3 (SEQ ID NO:21):

Biotin-GGt tac ttc ttc aac tcc atc GGG TTTT CCC gat gga gtt gaa gaa gta aCC

Total: 52 bp

Lower case sequence: ZFPAp3 binding site

(21) Sequence of oligo NRI-1 (SEQ ID NO:22):

Biotin-GG ttc tac ccc tcc cac cgc GGG TTTT CCC gcg gtg gga ggg gta gaa CC

Total: 51 bp

(22) Sequence of oligo NRI-2 (SEQ ID NO:23):

Biotin-GG tgc ggc gac tgc agc agc GGG TTTT CCC gct gct gca gtc gcc gca CC

Total: 51 bp

(23) Sequence of oligo hHD-I (SEQ ID NO:24):

Biotin-GG ggc ccc gcc tcc gcc ggc GGG TTTT CCC gcc ggc gga ggc ggg gcc
CC

Total: 51 bp

(24) Sequence of oligo hHD-II (SEQ ID NO:25):

Biotin-GG ggc agc ccc cac ggc gcc GGG TTTT CCC ggc gcc gtg ggg gct gcc CC

Total: 51 bp

(25) Sequence of oligo c5p1-g (SEQ ID NO:26):

Biotin-GG gac acc ccc aac ccc gcc GGG TTTT CCC ggc ggg gtt ggg ggt gtc CC

Total: 51 bp

(26) Sequence of oligo c5p3-g (SEQ ID NO:27):

Biotin-GG ctc tgc tca tcc cac tac GGG TTTT CCC gta gtg gga tga gca gag CC

Total: 51 bp

(27) Sequence of oligo B3c2 (SEQ ID NO:28):

Biotin-GG acc cac cgc gtc ccc tcc GGG TTTT CCC gga ggg gac gcg gtg ggt CC

Total: 51 bp

(28) Sequence of oligo e2c-g (SEQ ID NO:29):

Biotin-GG cac tgc ggc tcc ggc ccc GGG TTTT CCC ggg gcc gga gcc gca gtg CC

Total: 51 bp

(29) Sequence of primer Ap3-F (SEQ ID NO:30):

GGCGAGAGGGAAGATCCAG

Total: 19 bp

(30) Sequence of primer NZlib5' (SEQ ID NO:31):

GGCCCAGGCGGCCCTCGAGC

Total: 20 bp

(31) Sequence of primer Ap3f4-R (SEQ ID NO:32):

CTCCTCTAATACGACTCACTATAGGGACACTCACCTAGCCTCTG

Total: 44 bp

(32) Sequence of primer m4f3-R (SEQ ID NO:33):

CCTCGCAAGATCACGACAATC

Total: 21 bp

(33) Sequence of quantitative PCR probe for AP3 (SEQ ID NO:34):

CCATTTCATCCTCAAGACGACGCAGCT

Total: 27 bp

(34) Sequence of quantitative PCR primer for AP3 (Forward) (SEQ ID NO:35):

TTTGGACGAGCTTGACATTGAC

Total: 22 bp

(35) Sequence of quantitative PCR primer for AP3 (Reverse) (SEQ ID NO:36):

CGCGAACGAGTTTGAAAGTG

Total: 20 bp

(36) Sequence of 2C7-SID (Figure 3) (SEQ ID NO:66):

gacggatcgggagatctcccgatcccctatggcgactctcagtacaatctgctctgatgcccatagttaagccagta
tctgctccctgcttgtgttggaggtcgtgagtagtgccgagcaaaatttaagctacaacaaggcaaggcttgaccgacaatt
gcatgaagaatctgcttagggtaggcgttttgcgctgcttcgcgatgtacgggccagatatacgcggtgacattgattattgacta
gttattaatagtaataattacgggggtcattagttcatagcccataatggagttccggttacataacttacggtaaatggccgcct
gggtgaccgccaacgacccccgccattgacgtcaataatgacgtatgtcccatagtaacgccaatagggaacttccattgac
gtcaatgggtggactattacggtaaatgcccacttggcagtagatcaatgtatcatatgccaagtagccccctattgacgtca
atgacggtaaatggccgcctggcattatgcccagtagacgttatgggactttctacttggcagtagatctacgtattagtc
cgctattaccatggtgatgcggttttggcagtagatcaatggcggtggatagcggttgactacggggatttccaagtcacc
ccattgacgtcaatgggagtttgtttggcaccataatcaacgggactttccaaatgtcgtacaactccgccccattgacgaa
atggcggttagcggtgtacgggtgggaggtctatataagcagagctcttggttaactagagaaccactgcttactggttatcg
aaattaatacgaactactataggagaccaagctggctagcatggccgctgccgtgcgatgaacatccagatgctgctgaa
gccgctgattatctggaacgccgggagcgcgaagccgagcacggctacgccagcatgctgccatatccgaaaagaaacgc
aagtgggccaggcgccctcagccctatgcttgcctgtcagtcctgcgatcgccgcttttctaagtcggctgatctgaagc
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ccacatccgcatccacacaggccagaagcccttgcctgtgacatttggggaggaagtttccaggagtgatgaacgcaaga
ggcataccaaaatccataccggtgagaagccctatgcttgcctgtcagtcctgcgatcgccgcttttctaagtcggctgatctg
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ccaccacatccgcatccacacaggccagaagcccttgcctgtgacatttggggaggaagtttccaggagtgatgaacgca
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tacgcttcttgaaagcttggtaccgagctcggatccactagtcagtggtggaattctgcagatatccagcacagtggcggcc
gctcgagctagagggcccggttaaacccgctgatcagctcagctgtccttctagttgccagccatctgttggttccccctccc
cgtgcttcttgacctggaaggtgccactccactgtccttcttaataaaatgaggaaattgcatcgattgtctgagtaggtgt
cattctattctgggggtgggggtggggcaggacagcaagggggaggattgggaagacaatagcaggcatgctggggatgcg
gtgggctctatggcttctgagggcgaaagaaccagctggggctctaggggtatccccacgcgcctgtagcggcgcataag
cgcggggggtgtggtgttacgcgcagcgtgaccgtacacttgcagcgccctagcggcgctccttctgcttcttcccttct
ttctgccacgttcggcgcttccccgtcaagctctaaatcggggcatcccttaggggtccgatttagtgccttacggcacctcga
ccccaaaaaacttgattaggtgatggtcacgtagtgggccatcgccctgatagacggttttcggcctttgacgttgagtcac
gttcttaatagtggactctgttccaaactggaacaacactcaaccctatctcggctattcttttgattataagggatttggggatt
cggcctattggttaaaaaatgagctgatttaaaaaaatttaacgcgaattaattctgtggaatgtgtgtcagttagggtgtggaag
tccccaggctccccaggcaggcagaagtatgcaaagcatgcatcctaattagtcagcaaccagggtgtggaagtcccccaggct
ccccagcaggcagaagtatgcaaagcatgcatcctaattagtcagcaaccatagtcggcccttaactccgcccacccgcccc
taactccgcccagttccgcccattctccgcccattggtgactaattttttatgtagaggccgaggccgctctgctctga
gctattccagaagtgtgaggaggcttttggaggcctaggttttcaaaaagctccgggagcttgatatccatttccggtatc
gatcagcacgtgttgacaattaatcatcggcatagatatcggcatagtataacgacaaggtgaggaactaaaccatggccaa
gttgaccagtgcggttccggtgtcaccgcgcgcgacgtcggcgagcgggtcagttctggaccgaccggctcgggttctccc
gggacttctgtggaggacgacttccggtgtgttccgggacgacgtgacctgttcacgcgcggtccaggaccagggtgtg
gccggacaacacctggcctgggtgtggtgtgcgcggcctggacgagctgtacgccagtggtcggaggctgtgtccacgaa
cttccgggacgctccggcgccgcatgaccgagatcgccgagcagccgtggggcgaggagttcgccctgcgcgaccggg
ccggcaactgcgtgcacttctgtggccgaggagcaggactgacacgtgtacgagatttcgattccaccgccccttctatgaaa
ggttgggcttcggaatcgtttccgggacgcccggctggatgatctccagcgcggggaatcagctggagttctcggccacc
caactgtttattgcagcttataatggttacaataaagcaatagcatcacaaatttcacaataaagcatttttctactgcattctagt
gtggttctcacaactcatcaatgtatcttatcatgtctgtataccgtcgacctctagctagagcttggcgtaatcatggtcatagctgt
ttcctgtgtgaaattgtatccgctcacaaattccacacacatacagccggaagcataaagtgtaaagcctggggtgcctaataga
gtgagctaaactacattaattgcgttgcgtcactgcccgtttccagtcgggaaacctgtcgtgccagctgcatfaatgaatcggc
caacgcgcggggagaggcggttgcgtattggcgcttctccgcttccgctcactgactcgtcgcgtcggctcgttcggctgc
ggcgagcgggtatcagctcactcaagggcgtatccaggaatcaggggataacgcaggaaagaacatgtgagc
aaaaggccagcaaaaggccaggaaccgtaaaaaggccggttgcgttccataggtcggccccctgacgagcatc
acaaaaatcagcgtcaagtcagagggtggcgaaacccgacaggactataaagataaccaggcggttccccctggaagctccctc
gtgcgtctcctgttccgacctgcccgttaccggatacctgtccgcttctccctcgggaagcggtggcgcttctcaatgtca
cgctgtaggtatctcagttcgggtgtaggtcgttcgtccaagctgggctgtgtgcacgaacccccgttcagccccaccgctgcg
ccttatccggtaactatcgtcttgagccaacccggttaagcacgacttatccactggcagcagccactggtaacaggattag
cagagcgaggtatgtagcggtgtacagagttctgaagtggcctaactacggctacactagaaggacagtatttggatc
tgcgctctgtgaagccagttaccttcggaaaaagagttggtagcttctgatccggcaaaaccaccgctggtagcggtgtt
ttttgtttgcaagcagcagattacgcgcagaaaaaaggatctcaagaagatccttctatctttctacggggctgtgacgctcagtg
gaacgaaaactcacgttaagggttttggctatgagattatcaaaaaggatcttcacctagatccttttaattaaaaatgaagtta
aatcaatctaaagtatatatgagtaaaacttggtctgacagttaccaatgcttaatcagtgaggcacctatctcagcgatctgtctattc
gttcatccatagttgcctgactccccgtcgtgtagataactacgatacgggagggttaccatctggccccagtgctgcaatgata
ccgcgagaccacgctcaccggctccagatttatcagaataaaccagccagccggaaggccgagcgcagaagtggctct
gcaactttatccgctccatccagcttattaattgttccgggaagctagagtaagtgtccagtttaattggttcgcaacgtgtt
tgccattgtacaggcatcgtggtgtcacgctcgtcgttggatgggttcatcagctccggttcccaacgatcaaggcgagttac
atgatccccatgttgtgcaaaaaagcggttagctccttcggctcctccgatcgtgtcagaagtaagttggccgagtggtatcact
catggttatggcagcactgcataattcttactgtcatgccatccgtaagatgctttctgtactggtagtactcaaccaagtcat
ctgagaatagtgtatcgggcgaccgagttgcttggccggcgtcaatacgggataataccgcgccacatagcagaactttaaa
gtgctcatcattgaaaaacgttcttcggggcgaaaaactcgaaggatcttaccgctgttgagatccagttcagtgtaaccactcgt
gcaccaactgatcttcagcatctttacttaccagcggttctgggtgagcaaaaacaggaaggcaaaatgccgcaaaaaagg

gaataagggcgacacggaaatgtgaatactcatactcttccttttcaatattattgaagcattatcagggttattgtctcatgagcg
gatacatattgaatgtatttagaaaaataaacaatataggggtccgcgcacattccccgaaaagtgccacctgacgtc

Figure 24

(1) Sequence of promoter CsVMV (Example 1A) (SEQ ID NO:1):

Tctagaaactagcttcagaaggaattatccaagatgtagcatcaagaatccaatgtttacgggaaaaactatggaa
gtattatgtgagctcagcaagaagcagatcaatatcgccacatatgcaacctatgttcaaaaatgaagaatgtacagatacaag
atcctatactgccagaatacgaagaagaatacgtagaaattgaaaaagaagaaccaggcgaagaaaagaatcttgaagacgta
agcactgacgacaacaatgaaaagaagaagataaggctcgggtattgtgaaagagacatagaggacacatgaagggtggaaaa
tgtaaggcggaagtaacctatcacaaaggaatcttccccactacttatcctttatattttccgtgtcattttgcccttgagtt
ttcctataaaggaaccaagttcggcattgtgaaaacaagaaaaatttggtgtaagctattttcttgaagtactgaggatacaact
tcagagaaattgtaagttgta

Total 531 bp

(2) Sequence of zinc finger protein 2C7 binding site (Example 1A) (SEQ ID NO:2):

GCG TGG GCG GCG TGG GCG

Total 18 bp.

(3) Sequence of promoter pc7rbTATA (Example 1A) (SEQ ID NO:3):

Cccgggtatataataagcttggcattccgggtactgttggtaaagccacat

Total 51 bp.

(4) Sequence of pND3008 coding region (Example 1B) (SEQ ID NO:4):

agcgtgaccggctcgtccccctctagagataatgagcattgcatgtctaagttataaaaaattaccacatattttttg
tcacacttggttgaagtgcagttatctatctttatcacatatatttaactttactctacgaataataatctatagtactacaataatca
gtgttttagagaatcatataaatgaacagttagacatggtctaaaggacaattgagtattttgacaacaggactctacagtttatctt
ttagtgtgcatgtgttccttttttttgcaaatagcttcacctatataatacttcacccattttatttagtacatccatttagggtttagggt
aatggttttatagactaatttttttagtacatctattttattttagcctctaaattaagaaaactaaaactctatttttagtttttttta
ataatttagatataaaatagaataaaataaagtactaaaaataaacaataaccctttaagaaattaaaaaactaaggaaacattt
tcttgtttcgagtagataatgccagcctgttaaacgccgtcgacgagttaacggacaccaaccagcgaaccagcagcgtcgcg
tcgggccaagcgaagcagacggcacggcatctctgtcgtcctctggacccctctcgagagttccgctccaccgttgacttg
ctccgctgtcggcatccagaaattgcgtggcgggagcggcagacgtgagccggcacggcaggcggcctcctcctctcacg
gcacggcagctacgggggattcctttccaccgctccttcgctttcccttcctcgcccgccgtaataaatagacacccctccaca

ccctctttccccaacctcgtgtgttcggagcgcacacacacaaccagatctccccaatccaccgctcggcacctccgctt
 caaggtagccgctcgtcctccccccccccctctaccttctctagatcggcgtccggtccatggttagggcccgtagtgc
 tacttctgttcatgtttgtgtagatccgtgttgtagatccgtgctgtagcgttcgtacacggatgcgacctgtacgtcagacac
 gttctgattgctaacttgccagtgtttctttggggaatcctgggatggctctagccgttcgcagacgggatcgattcatgatttt
 tttgttctgtgcatagggtttggttgcccttttcttattcaataatgccgtgcactgtttgtcgggtcatctttcatgctttttgt
 cttggtgtgatgatgtggtcgtggtggcggcgttctagatcggagtagaattctgttcaaactacctggtggattattaattttg
 atctgtatgtgtgtccatacatattcatagttacgaattgaagatgatggatggaaatcgcgatctaggataggtatacatgtgatg
 cgggttttactgatgcataacagagatgctttttgttcgcttggtgtgatgtggtgtggttggcggtcgttcattcgttctagat
 cggagtagaatactgttcaaactacctggtgtattattaattttggaactgtatgtgtgtgcatacatcttcatagttacgagtttaag
 atggatggaaatcgcgatctaggataggtatacatgttgatgtgggttttactgatgcatacatgatggcatatgcagcatctattc
 atatgctctaaccttgagtacctatctattataataaacaagatgtttataatttttgatcttgatatacttggtgatggcatatgca
 gcagctatatgtggatttttttagccctgccttcatacgtatttttcttggtactgtttctttgtcgatgctcaccctgtgttggtgt
 tacttctgcaggcgcactctagaggatctatggcccaggcggccctcgcgctccctatgcttgccctgtcgagtcctgcgatcgc
 cgcttttctaagtcggctgatctgaagcgccatatccgcatccacacaggccagaagcccttccagtgtcgaatatgcatgcgtaa
 cttcagtcgtagtgaccaccttaccaccacatccgcaccacacaggcgagaagccctttgcctgtgacatttgtgggaggaag
 ttgcccaggagtgtgaacgcaaggcataccaaaatccataccggtgagaagccctatgcttgccctgtcgagtcctgcgatc
 gccgcttttctaagtcggctgatctgaagcgccatatccgcatccacacaggccagaagcccttccagtgtcgaatatgcatgcgt
 aacttcagtcgtagtgaccaccttaccaccacatccgcaccacacaggcgagaagccctttgcctgtgacatttgtgggagga
 agtttgccaggagtgtgaacgcaaggcataccaaaatccatttaagacagaaggactctagaactagtggccaggccggc
 caggctagcccgaaaaagaaacgcaaagttggcgcgccgacgcgctggacgatttcgatctcgacatgctgggttctgatgc
 cctcgatgactttgacctggatatgttggaagcgacgcattggatgactttgatctggacatgctcggctccgatgctctggacg
 atttcgatctcgatatgttaattaactaccgtagcaggttccggactacgcttcttgagaattcgcggccgcccggccgagcctag
 ggaggagctcaagatccccgaatttccccgatcgttcaaacatttgcaataaagtttctaagattgaatcctgttgccggtcttg
 cgatgattatcatctaatttctgtgaattacgttaagcatgtaataattaacatgtaatgcacgtatttatgagatgggttttatga
 ttagagtcgccgaattatacatttaatacgcgatagaaaacaaaatatagcgcgcaaactaggataaattatcgcgcggtgtca
 tctatgttactagatccgggaattgggtac

Total:	3120 bp
ZmUbi promoter:	44 bp to 2026 bp
Six finger ZFP2C7:	2060 bp to 2588 bp
Nuclear localization signal:	2620 bp to 2641 bp
VP64 activation domain:	2641 bp to 2805 bp

HA epitope tag: 2805 bp to 2836 bp
Nos terminator: 2884 bp to 3164 bp

(5) Sequence of pND3018 coding region (Example 1B) (SEQ ID NO:5):

agcgtgacccggctgctgccccctctagagataatgagcattgcatgtctaagtataaaaaattaccacatattttttg
tcacactgtttgaagtgcagttatctatctttatatacatattttaaactttactctacgaataatataatctatagtactacaataatca
gtgttttagaatacataaaatgaacagtttagacatggctctaaaggacaattgagtatttgacaacaggactctacagttttatctt
ttagtgtgcatgtgttcctttttttgcaaatagcttcacctatataataacttcatccattttattagtagcatccatttaggggttaggggt
aatggttttatagactaatttttttagtagcatctattttatctatttttagcctctaaattaagaaaactaaaactctatttttagtttttattta
ataatttagatataaaatagaataaaataaagtactaaaaataaacaataacccttaagaaataaaaaactaaggaaacattt
tcttgttcgagtagataatgccagcctgttaaacgccgtcgacgagtctaacggacaccaaccagcgaaccagcagcgtcgcg
tcgggccaagcgaagcagacggcacggcatctctgtcgtgcctctggacccctctcgagagttccgtccaccgttgacttg
ctccgctgtcggcatccagaaattgcgtggcggagcggcagacgtgagccggcacggcaggcggcctcctcctcctcag
gcacggcagctacgggggattcctttcccaccgctccttcgtttccctcctcgcggcgtataaataagacacccctccaca
ccctctttcccaacctcgtgttggtcggagcgacacacacacaaccagatctccccaatccaccgctcggcacctccgctt
caaggtagccgctcgtcctccccccccccctctctacctctctagatcggcgttccgggtccatggttagggcccggttagtgc
tacttctgttcatgtttgtgttagatccgtgtttgtgttagatccgtgctgtagcgttcgtacacggatgcgacctgtacgtcagacac
gttctgattgctaacttgccagtggtttcttttggggaatcctgggatggctctagccgttccgcagacgggatcgtttcatgatttt
ttgttctggtcatagggttgggttgccttttcttttatttcaatatatgccgtgcacttgtttgtcgggtcatctttcatgcttttttgt
cttgggtgtgatgtggtctggttggcggtcgttctagatcggagtagaattctgtttcaaactacctggtggatttataattttg
atctgtatgtgtgtccatataattcatagttacgaattgaagatgatggatggaaatcgcgtctaggataggtatacatgttgatg
cgggttttactgatcatatacagagatgctttttgtcgttgggtgtgatgtggtgtggttggcggtcgttcattcgttctagat
cggagtagaataactgtttcaaactacctggtgtatttataattttggaactgtatgtgtgtgcatacatctcatagttacgagtttaag
atggatggaaatcgcgtctaggataggtatacatgttgatgtgggttttactgatgcatacatgatggcatatgcagcatctattc
atatgctctaaccttgagtacctatctattataataaacaagtatgtttataatttttgatcttgatacttggatgatggcatatgca
gcagctatatgtgatttttttagccctgccttcatacgctatttttgccttggtactgtttcttttgcgatgctcaccctgttgttggtg
tacttctgcaggtcgactctagaggatccactagttagccatgggctagcatggccgctgccgtgcgcatgaacatccagatgct
gctcgaagccgctgattatctggaacgccgggagcgcgaagccgagcacggctacgccagcatgctgccatatccgaaaaag
aaacgcaaggtggcccaggcggccctcgagctcccctatgcttgcctgtcagtcctgcgatcgccgcttttctaagtcgggtg
atctgaagcgccatatccgcatccacacaggccagaagcccttcagtgctgaatatgcatgcgtaacttcagtcgtagtacca
ccttaccacccacatccgcacccacacaggcgagaagccttttgcctgtgacatttggggagggaagtttgcaggagtgatgaa

cgcaagaggcataccaaaatccataccggtgagaagccctatgcttgcctgtcgagtcctgcgatgccgcttttctaagtcgg
ctgatctgaagcgccatatccgcatccacacaggccagaagccctccagtgatgaatgcatgcgtaacttcagtcgtagtga
ccaccttaccacccacatccgcacccacacaggcgagaagcctttgcctgtgacatttggggaggaagtttgcaggagtgat
gaacgcaagaggcataccaaaatccatttaagacagaaggactctagaactagtgccaggccggcagtagccgtacgacg
ttccggactacgcttcttgaagcttggtaccgagctcggatccccgaatttcccgatcgttcaaactttggcaataaagtttct
aagattgaatcctgttgcggcttgcgatgattatcatctaatttctgtgaattacgttaagcatgtaataattaacatgtaatgatg
acgttatttatgagatgggttttatgattagagtcgccgaattatacatttaacgcgatagaaaacaaaatatagcgcgcaaacta
ggataaattatcgcgcgcggtgtcatctatgttactagatccgggaattccggaccggtaccagcgcc

Total:	3068 bp
ZmUbi promoter:	44 bp to 2026 bp
SID repression domain:	2066 bp to 2173 bp
Nuclear localization signal:	2174 bp to 2194 bp
Six finger ZFP2C7:	2207 bp to 2735 bp
HA epitope tag:	2762 bp to 2791 bp
Nos terminator:	2820 bp to 3112 bp

(6) Sequence of 6X2C7 binding site (SEQ ID NO:6):

Cgtgctagcgcgtggcgccgtgggcgaacaagcgtggcgccgtgggcgaacaagcgtggcgccgtgggc
gactagtctagcgcgtggcgccgtgggcgaacaagcgtggcgccgtgggcgaacaagcgtggcgccgtgggcgac
tagtg

Total: 155 bp

(7) Sequence of 3 finger protein C7: (SEQ ID NO: 73)

Atggcccaggcgccctcgagccctatgcttgcctgtcgagtcctgcgatgccgcttttctaagtcggctgatctg
aagcgccatatccgcatccacacaggccagaagccctccagtgatgaatgcatgcgtaacttcagtcgtagtgaccacctta
ccacccacatccgcacccacacaggcgagaagcctttgcctgtgacatttggggaggaagtttgcaggagtgatgaacgca
agaggcataccaaaatccatttaagacagaaggactctagaactagtgccaggccggcaggctagc

Total: 314 bp

(8) Amino acid sequence of 3 finger protein C7: (SEQ ID NO: 74)

Maqaalepyacpvscdrfrfsksadlkrhrihtgqkpfqcrimmmfsrsdhlththrtgkpfacdicgrkfar
sderkrhtkihlrqkdsrtsgqagqas

Total: 105 aa

(9) Sequence of zinc finger protein ZFPap3 binding site:

GAT GGA GTT GAA GAA GTA (SEQ ID NO: 7)

Total: 18 bp

(10) Sequence of zinc finger protein ZFPm1 and ZFPm2 binding site m12:

GCC TCC TTC CTC CTC TCA CTC (SEQ ID NO: 8)

Total: 21 bp

ZFPm1 binding site: compliment strand of 1 to 18

ZFPm2 binding site: compliment strand of 4 to 21

(11) Sequence of zinc finger protein ZFPm3 and ZFPm4 binding site m34:

GCC AAC TAC TAC GGC TCC CTC ACC (SEQ ID NO: 11)

Total: 21 bp

ZFPm3 binding site: compliment strand of 1 to 18

ZFPm4 binding site: compliment strand of 7 to 24

(12) Partial sequence of pMal-m1 (1-3300 bp) and zinc finger protein ZFPm1

(2719-3270 bp) (SEQ ID NO: 14):

ccgacaccatcgaatggtgcaaaccttgcggtatggcatgatagcgcccggaagagagtcattcagggtggt
gaatgtgaaccagtaacgttatacgtatgctgcagagatgcccgtgtctctatcagaccgttcccgcgtggtgaaccaggcca
gccacgttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgctgattggcgttgccacctccagctggccctgcacgcgccgtcgcaattgtcggcgat
taaatctcgcgccgatcaactgggtgccagcgtggtggtgctgatggtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaatcttctcgcgaacgcgtcagtggtggtgatcattaactatccgtggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcggtatttcttgatgtctctgaccagacaccatcaacagtatttttctccatgaagacggtagcgga
ctggcggtggagcatctggtcgcattgggtcaccagcaaatcgcgctgtagcgggccattaagtctgtctcggcgctctgc
gtctggctggctggcataaatatctcactcgcaatcaaattcagccgatagcggaacgggaaggcgactggagtgccatgtccg

gtttcaacaaccatgcaaatgctgaatgagggcatcgttcccactgcgatgctggttgccaacgatcagatggcgctgggcgc
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatactcggtagtgggatacgacgataccgaagacagctcat
gttatatcccgccgttaaccacatcaaacaggatttgcctgctggggcaaaccagcgtggaccgcttctgcaactctctcag
ggccaggcggtgaagggaatcagctgttgcctcactggtgaaaagaaaaaccacctggcgcccaatacgaaaccg
cctctccccgcgcgttgccgattcattaatgcagctggcacgacaggttcccactggaaagcgggcagtgagcgcaacgc
aattaatgtgagtagctcactcattaggcacaattctcatgtttgacagcttatcactgactgcacggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcaaggcgactcccgttct
ggataatgtttttgcgccgacatcataacggttctggcaaataattctgaaatgagctgttgacaattaatcatcggtcgtataatgt
gtggaattgtgagcggataacaattcacacaggaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc
atagattatgaaaactgaagaaggtaactggtaacttgattaacggcgataaaggctataacggtctcgtgaagtcggtaag
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattccacaggttgcggcaact
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggtgaaatcaccgg
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt
gaagcgttatcgctgattataacaagatctgctgccgaacccgcaaaaacctgggaagagatcccgcgctggataaagaa
ctgaaagcgaaggtaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
tatgcttcaagtatgaaaacggcaagtacgacattaaagacgtggcggtggataacgctggcgcgaaagcgggtctgacctc
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca
agggtcaaccatccaaaccgttgcgtggcgctgctgagcgcaggtattaacgccgccagtcggaacaaagagctggcaaaaga
gttctctgaaaactatctgctgactgatgaaggctggaagcgggttaataaagacaaaccgctgggtgccgtagcgtgaagct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc
cgcagatgtccgcttctggtatgccgtgcgtactcgggtgatcaacgccgccagcggctcagactgtcgtgatgaagccctga
aagacgcgcagactaattcgagctgaacaacaacaataacaataacaacacctcgggatcgagggaaggatttcagaa
ttcggatcctcttctctgtgcccaggcggccctcagccccggggagaagccctatgcttgcgggaatgtgtaagtcttctc
tcagagctctcacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtcgggcaaatcttttag
ccagtccagcaacctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct
cggctctgacaatctcgtccggcaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtgtaagtcttctcagcc
gcagcgataacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtcgggcaaatcttttagc
caggccggccacctggccagccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagtcttctct
cggctctgacaatctcgtccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacgacgt
tccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm1: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm1: 2740 bp to 2790 bp

Primer F2-f of ZFPm1: 2867 bp to 2940 bp

Primer F2-b of ZFPm1: 2824 bp to 2889 bp

Primer F3-b1 ZFPm1: 2916 bp to 2973 bp

Primer F3-b2 ZFPm1: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm1: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm1: 2992 bp to 3042 bp

Primer F5-f of ZFPm1: 3119 bp to 3192 bp

Primer F5-b of ZFPm1: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm1: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm1: 3205 bp to 3273 bp

(13) Sequence of zinc finger protein ZFPm1

(Translated from pMal-m1: 2719-3270 bp): (SEQ ID NO: 75)

Aqaalepgekpyacpecgksfsdpghlvhrhqrthtgekpykpecgksfsqrahlerhqrthtgekpykpec
gksfsqssnlvrhqrthtgekpyacpecgksfsrdnlvrhqrthtgekpykpecgksfsrdnlvrhqrthtgekpykpe
cgksfsqaghlashqrthtggktsgqag

(14) Partial sequence of pMal-m2 (1-3300 bp) and zinc finger protein ZFPm2

(2719-3270 bp) (SEQ ID NO:15):

ccgacaccatcgaatggtgcaaaaccttcgcggtatggcatgatagcgcccggaagagagtaattcagggtggt
gaatgtgaaaccagtaacgttatcatgatgtcgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtggaaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgctgattggcgttgccacctccagctggccctgcacgcgccgtcgcaaattgtcgcggcgat
taaattctcgccgatcaactgggtgccagcgtggtggtgcatggtagaacgaagcggcgctgaagcctgtaaagcggcg
gtgcacaatcttctcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgtccggcggtatttcttgatgtctctgaccagacacccatcaacagtatttttctcccatgaagacggtacgcga
ctgggcgtggagcatctggtcgattgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgcgctctgc

gtctggctggctggcataaatctcactcgcaatcaaattcagccgatagcggaaacgggaaggcgactggagtgccatgtccg
gtttcaacaaacatgcaaatgctgaatgagggcatcgtcccactcgatgctggttgccaacgatcagatggcgctgggcgc
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtggtgatacgacgataccgaagacagctcat
gttatatcccgccgttaaccaccatcaaacaggatttcgcctgctggggcaaacaggcgtggaccgcttgctgcaactctctcag
ggccaggcggggaagggaatcagctgttgcctcactggtgaaaagaaaaaccacctggcgcccaatacgcaaaccg
cctctccccgcgcgttggccgattcattaatgcagctggcacgacaggttcccactggaaagcgggagtgagcgcaacgc
aattaatgtgagtagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgctgctcaaggcgactcccgttct
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt
gtggaattgtgagcggataacaatttcacaggaacacccagtcctgttaggtgtttcacgagcacttcaccaacaaggacc
atagattatgaaaactgaagaaggtaaaactggtaacttggttaacggcgataaaggctataacggctcgcgtgaagtcggttaag
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattccacaggttgcggcaact
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggctacgctcaatctggcctgttggtgaaatcaccccg
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt
gaagcgttatcgctgattataacaaagatctgctgccgaacccgcaaaaacctgggaagagatcccggcgtggataaagaa
ctgaaagcgaaaggtgaagcgcgctgatgttaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
tatcggttaagatgaaaacggcaagtacgacattaaagacgtggcggtggataacgctggcgcgaaagcgggtctgaccttc
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaaaaggcgaaacag
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactccgaccttca
agggtcaaccatccaaaccgttctgtgctgagcgcaggtattaacgccgccagtcgaacaaagagctggcaaaaga
gttctctgaaaactatctgctgactgatgaaggctggaagcgggttaataaagacaaaccgctgggtgccgtagcgtgaagctt
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc
cgcatgtccgcttctgtgatccgtgcgtactcggtgatcaacgccgccagcggctcgtcagactgtcgtgatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacaacctcgggatcgagggaaggatttcagaa
ttcggatccttctctctgtgcccaggcggccctcgagccggggagaagccctatgcttgccggaatgtggttaagtccttct
tcagagctctcacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag
ccagtccagcaacctggtgcgccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagcttctct
cggctcgacaatctcgtccggcaccacgtactcacaccggggagaagccctatgcttgccggaatgtggttaagtccttcagc
gcagcgataacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttagc
caggccggccacctggccagccatcaacgcactcactggcgagaagccatacaaatgtccagaatgtggcaagcttctct

cggtctgacaatctcgccggcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtacccgtacgacgt
tccggactacgct

Total: 514 bp

Primer F1-f1 of ZFPm2: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m2: 2740 bp to 2790 bp

Primer F2-f of ZFP m2: 2867 bp to 2940 bp

Primer F2-b of ZFPm2: 2824 bp to 2889 bp

Primer F3-b1 ZFPm2: 2916 bp to 2973 bp

Primer F3-b2 ZFPm2: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm2: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm2: 2992 bp to 3042 bp

Primer F5-f of ZFPm2: 3119 bp to 3192 bp

Primer F5-b of ZFPm2: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm2: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm2: 3205 bp to 3273 bp

(15) Partial sequence of pMal-m3 (1-3300 bp) and zinc finger protein ZFPm3

(2719-3270 bp) (SEQ ID NO:16):

ccgacaccatcgaatgggtgcaaaaccttcgcggtatggcatgatagcggccggaagagagtcattcagggtggt
gaatgtgaaaccagtaacgttatacagatgtcgcagagtatgccggtgtctcttatcagaccgttcccgcgtgggaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtggaaagcggcgatggcggagctgaattacattccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgctgattggcgttgccacctccagcttgccctgcacgcgccgtcgaaattgtcgcggcgat
taaatctcgcgccgatcaactgggtgccagcgtgggtgtcgtatgtagaacgaagcggcgctgaagcctgtaaagcggcg
gtgcacaatcttctcgcgaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcgttatttctgatgtctctgaccagacccatcaacagtatttttctcccatgaagacggtagcga
ctgggcgtggagcatctggtcgcattgggtcaccagcaaatcgcgtgttagcggggccattaagtctgtctcggcgcgtctgc
gtctggctggctggcataaatatctcactcgcaatcaaattcagccgatagcggaacgggaaggcgactggagtgccatgtccg
gttttaacaaaccatgcaaatgctgaatgagggcacgttccactgcgatgctggttgccaacgatcagatggcgtgggcgc
aatgcgcgccattaccgagtcggggtgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat
gttatatcccgccgttaaccaccatcaaacaggatttctgcctgctggggcaaacaggcgtggaccgcttctgcaactctctcag

ggccaggcgggtgaagggaatcagctgttggccgtctcactggtgaaaagaaaaaccaccctggcgcccaatcgcaaaccg
cctctccccgcgcttggccgattcattaatgcagctggcacgacaggttcccactggaaagcgggagtgagcgcaacgc
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcgactgcacgggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtgtcgtcaaggcgactcccgttct
ggataatgtttttgcgccgacatcataacggttctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt
gtggaattgtgagcggataacaatttcacacaggaaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc
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ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggtacgctcaatctggcctgttggtgaaatcaccggg
acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgctgtt
gaagcgttatcgctgatttatacaaaagatctgctgccgaacccgcaaaaacctgggaagagatcccgcgctggataaagaa
ctgaaagcgaaaggtgaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
tatgcttcaagtatgaaaacggcaagtagacattaaagacgtggcggtggataacgctggcgcgaaagcgggtctgacctt
ctggttgacctgattaaaaacaacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgacatcaacggcccggtggcatggtccaacatgcacaccagcaaaagtgaattatggtgaacgggtactgccgacctca
agggtcaaccatccaacccgttcgttggcgtgctgagcgcaggtattaacgccgccagtccgaacaagagctggcaaaaga
gttcctcgaaaactatctgctgactgatgaaggtctggaagcgggttaataaagacaaaccgctgggtgccgtagcgctgaagtct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaacgccagaaaggtgaaatcatgccgaacatcc
cgcagatgtccgctttctggtatgccgtgactgcggtgatcaacgccgccagcggtcgtcagactgtcgtatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgagggaaggatttcagaa
ttcgatcctcttctctgtggcccaggcggccctcgagccgggggagaagccctatgcttgcgggaatgtgtaagtccttca
gcgatcctggccacctggttcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttta
gcaccagcggctccctggtgcgccatcaacgcactcactaggcgagaagccatacaaatgtccagaatgtggcaagtctttca
gccagagctccagcctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtgtaagtccttca
gccagagcagctccctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agtactgccgcgacctgtctgccatcaacgcactcactaggcgagaagccatacaaatgtccagaatgtggcaagtctttct
cccaatccagccatctctccggcaccaacgtactcacaccggtaaaaaaactagtggccaggccggccagtaccggtacgac
gttcgggactacgct

Total: 514 bp

Primer F1-f1 of ZFPm3: 2770 bp to 2850 bp

Primer F1-f2 of ZFP m3: 2740 bp to 2790 bp

Primer F2-f of ZFP m3: 2867 bp to 2940 bp

Primer F2-b of ZFPm3: 2824 bp to 2889 bp

Primer F3-b1 ZFPm3: 2916 bp to 2973 bp

Primer F3-b2 ZFPm3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPm3: 2992 bp to 3042 bp

Primer F5-f of ZFPm3: 3119 bp to 3192 bp

Primer F5-b of ZFPm3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPm3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPm3: 3205 bp to 3273 bp

(16) Partial sequence of pMal-m4 (1-3300 bp) and zinc finger protein ZFPm4

(2719-3270 bp) (SEQ ID NO:17):

ccgacaccatcgaatggtgcaaacctttcgcggtatggcatgatagcgcccggaagagagtcattcagggtggt
gaatgtgaaaccagtaacgttatacgaatgctgcagagtagccggtgtcttatacagaccgtttcccgctggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtgaagcggcgatggcggagctgaattacattcccaaccgcgtggcacaaca
actggcggggcaaacagtcgttgattggcgttgccacctccagctctggccctgcacgcgccgtcgaattgtcggcgcat
taaatctcgcgccgatcaactgggtgccagcgtggtggtgctgatgtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaatcttctcgcgaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcggtattttctgatgtctctgaccagacacctcaacagttattttctcccatgaagacgggtacgcga
ctgggcgtggagcatctggcgcattgggtcaccagcaaatcgcgctgttagcgggcccattaagttctgtctcggcgctctgc
gtctggctgggtggcataaatatctactcgaatcaaattcagccgatagcggaaagggaaggcgactggagtgccatgtccg
gttttaacaaaccatgcaaatgctgaatgagggcatcgttccactgcgatgctggttccaacgatcagatggcgctgggcgc
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtggtgatacgacgataccgaagacagctcat
gttatatcccgcggttaaccacatcaaacaggatttgcctgctggggcaaacaccagcgtggaccgcttctgcaactctctag
ggccaggcgggtgaagggaatcagctgttgcctctcactggtgaaaagaaaaaccacctggcgcccaatagcgaaccg
cctctccccgcgcttgccgattcattaatgcagctggcacgacagggttcccgactggaaagcgggcagtgagcgcaacgc
aattaatgtgagtagctcactcattaggcacaattctcatgttgacagcttatcatgactgcacggtgcaccaatgcttctggcg
caggcagccatcggaagctgtggtatggctgtcaggtcgtaaatcactgcataattcgtgtcgctcaaggcgcactcccgttct
ggataatgtttttgcgccgacatcataacgggtctggcaaatattctgaaatgagctgttgacaattaatcatcggtcgtataatgt

gtggaattgtgagcggataacaatttcacacaggaacagccagtcctttaggtgtttcacgagcacttcaccaacaaggacc
atagattatgaaaactgaagaaggtaaactggtaacttgattaacggcgataaaggctataacggctcgcgtgaagtcggtgaag
aaattcgagaaagataccggaattaaagtcaccgttgagcatccggataaactggaagagaaattccacaggttgcggcaact
ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggtacgctcaatctggcctgttggtgaaatcaccccg
acaaagcgttcaggacaagctgtatccgtttacctgggatgccgtacgttacaacggcaagctgattgcttaccgatcgtgtt
gaagcgttatcgctgattataacaaagatctgctgccgaacccgccaaaacctgggaagagatcccgcgctggataaagaa
ctgaaagcgaaaggaagagcgcgctgatgttcaacctgcaagaaccgtacttcacctggccgctgattgctgctgacgggggt
tatcggttcaagtatgaaaacggcaagtacgacattaaagacgtggcgctggataacgctggcgcgaaagcgggtctgacctc
ctggttgacctgattaaaaacacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgaccatcaacggcccggtggcatggtccaacatcgacaccagcaaagtgaattatggtgtaacggtactgccgacctca
agggtcaaccatccaaaccgttcgttggcggtgctgagcgcaggtattaacgccgccagtcgaacaaagagctggcaaaaaga
gttctcgaaaactatctgctgactgatgaaggtctggaagcgggtaataaagacaaaccgctgggtgccgtagcgtgaagct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaatcatgccgaacatcc
cgcatgtccgcttctggtatgccgtgcgtactgcggtgatcaacgccgccagcggtcgtcagactgtcgtatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgaggggaaggatttcagaa
ttcgatcctcttctctgtggccaggcggccctcgagccggggagaagccctatgcttgcgggaatgtgtaagtccttca
gccagagcagctccctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agccagagcagcagcctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtctttc
agtattgtcgtgatcttgcgaggcaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtgtaagtccttctc
tcagagctctcacctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatcttttag
ccgcagcgataacctggtgcgccatcaacgcactcatactggcgagaagccatacaaatgtccagaatgtggcaagtctttctca
acttcaggccatttggctccgtcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtagccgtacgacgtt
ccggactacgt

Total: 514 bp

Primer F1-f1 of ZFPm4: 2770 bp to 2850 bp

Primer F1-f2 of ZFPm4: 2740 bp to 2790 bp

Primer F2-f of ZFPm4: 2867 bp to 2940 bp

Primer F2-b of ZFPm4: 2824 bp to 2889 bp

Primer F3-b1 ZFPm4: 2916 bp to 2973 bp

Primer F3-b2 ZFPm4: 2953 bp to 3021 bp

Primer F4-f1 of ZFPm4: 3022 bp to 3102 bp
Primer F4-f2 of ZFPm4: 2992 bp to 3042 bp
Primer F5-f of ZFPm4: 3119 bp to 3192 bp
Primer F5-b of ZFPm4: 3076 bp to 3141 bp
Primer F6-b1 of ZFPm4: 3168 bp to 3225 bp
Primer F6-b2 of ZFPm4: 3205 bp to 3273 bp

(17) Partial sequence of pMal-Ap3 (1-3300 bp) and zinc finger protein ZFPAp3

(2719-3270 bp) (SEQ ID NO:18):

ccgacaccatcgaatggtgcaaacctttcgcggtatggcatgatagcgcccggaagagagtcgaattcagggtggt
gaatgtgaaaccagtaacgttatcagatgtcgcagagtatgccggtgtctcttatcagaccgttcccgcgtggtgaaccaggcca
gccacgtttctgcgaaaacgcgggaaaaagtggaagcggcgatggcggagctgaattacattcccaaccgcgtggcacaaca
actggcgggcaaacagtcgttgctgattggcgttgccacctcagctcggccctgcacgcgccgtcgaattgtcgcggcgat
taaattcgcgccgatcaactgggtgccagcgtggtggtcgtgatgtagaacgaagcggcgtcgaagcctgtaaagcggcg
gtgcacaatctctcgcgcaacgcgtcagtggtgatcattaactatccgctggatgaccaggatgccattgctgtggaagctg
cctgcactaatgttccggcggtatttcttgatgtctctgaccagacacccatcaacagtatttttctcccatgaagcggtagcga
ctgggcgtggagcatctggcgcattgggtcaccagcaaatcgcgctgttagcggggccattaagtctgtctcggcgcgtctgc
gtctggctggctggcataaatatctcactcgcaatcaaatcagccgatagcgggaacgggaaggcgactggagtgccatgtccg
gttttaacaaaccatgcaaatgctgaatgagggcatcgttcccactgcgatgctggttccaacgatcagatggcgtgggcgc
aatgcgcgccattaccgagtcgggctgcgcgttggtgcggatatctcggtagtgggatacgacgataccgaagacagctcat
gttatatcccgcgttaaccaccatcaaacaggatttgcctgctggggcaaacagcgtggaccgcttctgcaactctctcag
ggccaggcgggtgaagggaatcagctgttcccgtctcactggtgaaaagaaaaaccacctggcgcccaatacgaacccg
cctctccccgcgcttgccgattcattaatgcagctggcacgacaggttcccactggaaagcgggcagtgagcgcaacgc
aattaatgtgagttagctcactcattaggcacaattctcatgtttgacagcttatcatcactgcacggtgcaccaatgcttctggcgt
caggcagccatcggaagctgtggtatggctgtgcaggtcgtaaatcactgcataattcgtcgtcgtcaaggcgcactcccgttct
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gtggaattgtgagcggataacaattcacacaggaacagccagtcggttaggtgtttcacgagcacttcaccaacaaggacc
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ggcgatggccctgacattatcttctgggcacacgaccgcttgggtggtacgtcaatctggcctgttggtgaaatcaccgccg
acaaagcgttccaggacaagctgtatccgtttacctgggatgccgtactgttacaacggcaagctgattgcttaccgatcgtggt

gaagcgttatcgtgattataacaaagatctgctgccgaacccgccaaaaacctgggaagagatcccggcgctggataaagaa
ctgaaagcgaaaggtgaagagcgcgctgatgttcaacctgcaagaacctgacttcacctggccgctgattgctgctgacgggggt
tatgcgttcaagtatgaaaacggcaagtacgacattaaagacgtgggcgtggataacgctggcgcgaaagcgggtctgaccttc
ctgggtgacctgattaaaaacacacatgaatgcagacaccgattactccatcgagaagctgcctttaataaaggcgaaacag
cgatgacctcaacggcccgtggcatggccaacatcgacaccagcaagtgaattatggtgtaacggtactgccgacctca
aggggtcaacctcaaaccgttcgttggcgtgctgagcgcaggtattaacgccgccagtccgaacaaagagctggcaaaaga
gttcctcgaaaactatctgtgactgatgaaggtctggaagcgggttaataaagacaaaccgctgggtgccgtagcgtgaagct
tacgaggaagagttggcgaaagatccacgtattgccgccaccatggaaaacgccagaaaggtgaaatcatgccgaacatcc
cgcatggtccgctttctggtatgccgtgcgtactgcggtgatcaacgccgccagcggtcgtcagactgtcgtgatgaagccctga
aagacgcgcagactaattcgagctcgaacaacaacaataacaataacaacacctcgggatcgagggaaggatttcagaa
ttcggatcctcttctgttggcccaggcggccctcgagcccggggagaagccctatgcttgcgggaatgtggttaagtccttca
gccagagcagctccctggtgcgccaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agccagtcagcaacctggtgcgccatcaacgcactcacttggcgagaagccatacaaatgtccagaatgtggcaagtcttc
agccagtcagcaacctggtgcgccaccaacgtactcacaccggggagaagccctatgcttgcgggaatgtggttaagtccttc
agcaccagtggctccttggtagacaccagcgtaccacacgggtgaaaaaccgtataaatgccagagtgcggcaaatctttt
agccagcgcgccacctggaacgccatcaacgcactcacttggcgagaagccatacaaatgtccagaatgtggcaagtcttt
ctcaactcaggcaacttggctccgtcaccaacgtactcacaccggtaaaaaactagtggccaggccggccagtaccggtacga
cgttcggactacgct

Total: 514 bp

Primer F1-f1 of ZFPap3: 2770 bp to 2850 bp

Primer F1-f2 of ZFPap3: 2740 bp to 2790 bp

Primer F2-f of ZFPap3: 2867 bp to 2940 bp

Primer F2-b of ZFPap3: 2824 bp to 2889 bp

Primer F3-b1 ZFPap3: 2916 bp to 2973 bp

Primer F3-b2 ZFPap3: 2953 bp to 3021 bp

Primer F4-f1 of ZFPap3: 3022 bp to 3102 bp

Primer F4-f2 of ZFPap3: 2992 bp to 3042 bp

Primer F5-f of ZFPap3: 3119 bp to 3192 bp

Primer F5-b of ZFPap3: 3076 bp to 3141 bp

Primer F6-b1 of ZFPap3: 3168 bp to 3225 bp

Primer F6-b2 of ZFPAp3: 3205 bp to 3273 bp

(18) Sequence of oligo m12 (SEQ ID NO:19):

Biotin-GGa gcc tcc ttc ctc ctc tca ctc GGG TTTT CCC gag tga gag gag gaa gga
ggc tCC

Total: 58 bp

Lower case sequence: ZFPm1 and ZFPm2 binding site m12

(19) Sequence of oligo m34 (SEQ ID NO:20):

Biotin-GGa gcc aac tac tac ggc tcc ctc acc GGG TTTT CCC ggt gag gga gcc gta
gta gtt ggc tCC

Total: 58 bp

Lower case sequence: ZFPm3 and ZFPm4 binding site m34

(20) Sequence of oligo Ap3 (SEQ ID NO:21):

Biotin-GGt tac ttc ttc aac tcc atc GGG TTTT CCC gat gga gtt gaa gaa gta aCC

Total: 52 bp

Lower case sequence: ZFPAp3 binding site

(21) Sequence of oligo NRI-1 (SEQ ID NO:22):

Biotin-GG ttc tac ccc tcc cac cgc GGG TTTT CCC gcg gtg gga ggg gta gaa CC

Total: 51 bp

(22) Sequence of oligo NRI-2 (SEQ ID NO:23):

Biotin-GG tgc ggc gac tgc agc agc GGG TTTT CCC gct gct gca gtc gcc gca CC

Total: 51 bp

(23) Sequence of oligo hHD-I (SEQ ID NO:24):

Biotin-GG ggc ccc gcc tcc gcc ggc GGG TTTT CCC gcc ggc gga ggc ggg gcc
CC

Total: 51 bp

(24) Sequence of oligo hHD-II (SEQ ID NO:25):

Biotin-GG ggc agc ccc cac ggc gcc GGG TTTT CCC ggc gcc gtg ggg gct gcc CC

Total: 51 bp

(25) Sequence of oligo c5p1-g (SEQ ID NO:26):

Biotin-GG gac acc ccc aac ccc gcc GGG TTTT CCC ggc ggg gtt ggg ggt gtc CC

Total: 51 bp

(26) Sequence of oligo c5p3-g (SEQ ID NO:27):

Biotin-GG ctc tgc tca tcc cac tac GGG TTTT CCC gta gtg gga tga gca gag CC

Total: 51 bp

(27) Sequence of oligo B3c2 (SEQ ID NO:28):

Biotin-GG acc cac cgc gtc ccc tcc GGG TTTT CCC gga ggg gac gcg gtg ggt CC

Total: 51 bp

(28) Sequence of oligo e2c-g (SEQ ID NO:29):

Biotin-GG cac tgc ggc tcc ggc ccc GGG TTTT CCC ggg gcc gga gcc gca gtg CC

Total: 51 bp

(29) Sequence of primer Ap3-F (SEQ ID NO:30):

GGCGAGAGGGAAGATCCAG

Total: 19 bp

(30) Sequence of primer NZlib5' (SEQ ID NO:31):

GGCCCAGGCGGCCCTCGAGC

Total: 20 bp

(31) Sequence of primer Ap3f4-R (SEQ ID NO:32):

CTCCTCTAATACGACTCACTATAGGGACACTCACCTAGCCTCTG

Total: 44 bp

(32) Sequence of primer m4f3-R (SEQ ID NO:33):

CCTCGCAAGATCACGACAATC

Total: 21 bp

(33) Sequence of quantitative PCR probe for AP3 (SEQ ID NO:34):

CCATTTCATCCTCAAGACGACGCAGCT

Total: 27 bp

(34) Sequence of quantitative PCR primer for AP3 (Forward) (SEQ ID NO:35):

TTTGGACGAGCTTGACATTGAC

Total: 22 bp

(35) Sequence of quantitative PCR primer for AP3 (Reverse) (SEQ ID NO:36):

CGCGAACGAGTTTGAAAGTG

Total: 20 bp

(36) Sequence of 2C7-SID (Figure 3) (SEQ ID NO:66):

gacggatcgggagatctcccgatcccctatggctgactctcagtacaatctgctctgatgccgcagtagttaagccagta
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